

APPENDIX

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

5. (Once Amended) A packaged liquid crystal display as recited in claim 4 wherein the substrate includes one of aluminum or ceramic.

9. (Once Amended) A packaged liquid crystal display as recited in claim 1 further including a thermal support material and wherein the thickness of the thermal support material is between approximately 0.3 mm and 0.8 [mils]mm.

10. (Once Amended) A packaged liquid crystal display as recited in claim [7]9 wherein thermal support material is a thermal grease.

20. (Once Amended) The method of claim 14 wherein the thermal support material is disposed such that none of the plurality of spaced apart stabilizers [may be]are dispensed below the liquid crystal cell.

In the Specification:

The paragraph beginning at page 5, line 26, has been amended as follows:

-- In another embodiment, a method for constructing the LCD assembly is described. As a result of the reduced temperature sensitive curing involved in the present invention, cycle time, or the time required to construct the LCD assembly, is reduced to [approximately]less than five hours.--

The paragraph beginning at page 8, line 10, has been amended as follows:

-- Referring initially to Figures 6-9, a small scale liquid crystal display (LCD) assembly 600 according to one embodiment of the present invention will be described. The liquid crystal display 600 includes a substrate 602 having a recess 604 that acts as a containment chamber for receiving a die 606 attached to a transparent plate 608. A liquid crystal material is disposed between the die 606 and the transparent plate 608. Generally, the die 606, the transparent plate 608 and the liquid crystal material and other components between the die and transparent plate are collectively referred to as an LCD cell 609. The die 606 includes a pixel array 610 and a plurality of die bond pads 612. The pixel array 610 is responsible for producing the images that are shown on the liquid crystal display. The die bond pads 612 allow electrical communication with external devices. A cantilevered ground trace 622 passively contacts the transparent plate 608 to further ground the LCD cell.--

The paragraph beginning at page 9, line 4, has been amended as follows:

-- In the embodiment shown, a pair of the stabilizers 624 also act, along with a barrier 626, to retain an elastomeric encapsulating material (not shown in Figure 6) used to protect bonding wires 616 that electrically couple the die to external elements. As described in more detail below, these barriers effectively limit the encapsulating material to one end of the LCD cell 609. Thus, the primary elements that mechanically couple the LCD cell to substrate are the stabilizers 624. The only other elements that provide any additional mechanical coupling are the cantilevered ground trace 622 and the encapsulating material. The cumulative effect of the described structure minimizes the residual stress on the LCD cell. The reduced stresses[,] reduce the possibility of externally induced warpage occurring within the LCD assembly 600, during both construction and operation of the device, which in turn reduces the probability of internal stress induced optical defects, including variations in color uniformity and fringes, and optical shadows.—

The paragraph beginning at page 10, line 20, has been amended as follows:

-- The substrate assembly 700 also includes a barrier 626 which is used in subsequent containment of the encapsulating material. In the embodiment shown, the barrier 626 is attached to the top surface of the substrate 602 and surrounds the external bond pads 614 and a portion of the recess 604. Barrier 626[,] may be formed from a variety of materials[, as for example,] such as a molded plastic or other material capable of acting as a dam for the encapsulating material. In this embodiment, the barrier 626 is attached to the substrate 602 prior to placement of the LCD cell 609. Alternately, the barrier 626 may be attached to the substrate subsequent to the placement of the LCD cell 609.--

The paragraph beginning at page 11, line 20, has been amended as follows:

-- After the grease 620 has been placed in the recess 604, the LCD cell 609 is then placed in the recess 604 as shown in Figures 10 and 11. The LCD cell 609 typically includes the die [604]606, the transparent plate 608, and a liquid crystal material disposed therebetween. The die 606 includes a pixel array 610 and plurality of die bond pads 612. The composition of transparent plate 608 may be of any

suitable material such as glass and plastic, or the like, which provides substantial rigidity and a suitable adhesive surface for the stabilizers 624. While the transparent plate 608 is rectangular in this embodiment, it will be understood that the transparent plate 608 may be any geometric shape sufficient to cover the pixel array 610 of the die, while further sufficiently mounting to the LCD cell 609 via the stabilizers 624. --

APPENDIX OF PENDING CLAIMS

1. A packaged liquid crystal display comprising:
 - a containment structure having a bottom surface;
 - a liquid crystal cell including a die having a pixel array, a transparent plate attached to the die, and a liquid crystal material disposed in a gap region between the die and the transparent plate, the liquid crystal cell being positioned at least partially within the containment structure; and
 - a plurality of spaced apart stabilizers arranged to couple edge portions of the liquid crystal cell to the containment structure without adhering the bottom surface of the liquid crystal cell to the bottom surface of the containment structure.
2. A packaged liquid crystal display as recited in claim 1 further comprising a support material arranged to support the liquid crystal cell in a floating manner within the containment structure.
3. A packaged liquid crystal display as recited in claim 1 wherein the stabilizers are sufficiently compliant such that they do not induce substantial stresses in the LCD assembly.
4. A packaged liquid crystal display as recited in claim 1 wherein the containment structure includes a substrate having a recess therein, the liquid crystal cell being at least partially contained within the recess.
5. (Once Amended) A packaged liquid crystal display as recited in claim 4 wherein the substrate includes one of aluminum or ceramic.

6. A packaged liquid crystal display as recited in claim 4 wherein the substrate is comprised of Alloy Ash 42.

7. A packaged liquid crystal display as recited in claim 1 wherein the plurality of spaced apart stabilizers provide a mechanically stable system.

8. A packaged liquid crystal display as recited in claim 7 including four spaced apart stabilizers.

9. (Once Amended) A packaged liquid crystal display as recited in claim 1 further including a thermal support material and wherein the thickness of the thermal support material is between approximately 0.3 mm and 0.8 mm.

10. (Once Amended) A packaged liquid crystal display as recited in claim 9 wherein thermal support material is a thermal grease.

11. A packaged liquid crystal display as recited in claim 1 wherein the plurality of spaced apart stabilizers prevent flow of an encapsulating material.

12. A packaged liquid crystal display as recited in claim 1 wherein each of the plurality of spaced apart stabilizers are anchored solely to the side of the liquid crystal cell.

13. A packaged liquid crystal display as recited in claim 1 wherein all the structures adhering to the cell have a rigidity less than the liquid crystal display.

14. A method of packaging a liquid crystal display assembly comprising:
dispensing a thermal support material in a containment structure;
disposing a liquid crystal cell at least partially within the containment structure, the liquid crystal cell including a die having a pixel array, a transparent plate attached to the die, and a liquid crystal material disposed in a gap region between the die and the transparent plate; and
forming a plurality of spaced apart stabilizers arranged to couple an edge portion of the liquid crystal cell to the containment structure without adhering the

bottom surface of the liquid crystal cell to the bottom surface of the containment structure.

15. The method of claim 14 further including wire bonding a plurality of leads from the die to a plurality of leads on the containment structure.

16. The method of claim 15 further including depositing encapsulating material over the plurality of leads.

17. The method of claim 16 wherein the encapsulating material is prevented from surrounding the liquid crystal cell.

18. The method of claim 16 wherein a cycle time for a single cell is less than five hours.

19. The method of claim 14 wherein the plurality of spaced apart stabilizers are arranged in manner such that no substantially no stresses are imposed on the liquid crystal cell.

20. (Once Amended) The method of claim 14 wherein the thermal support material is disposed such that none of the plurality of spaced apart stabilizers are dispensed below the liquid crystal cell.

21. The method of claim 14 wherein the plurality of spaced apart stabilizers are anchored solely to the side of the liquid crystal cell.